

ELECTIVE COURSE IV – 3- SOFT COMPUTING

Unit I

Artificial Neural Networks: Basic concepts - Single layer perception - Multilayer Perception - Supervised and Unsupervised learning – Back propagation networks - Kohonen's self organizing networks - Hopfield network.

Unit II

Fuzzy Systems: Fuzzy sets and Fuzzy reasoning - Fuzzy matrices - Fuzzy functions - Decomposition - Fuzzy automata and languages - Fuzzy control methods – Fuzzy decision making

Unit III

Neuro - Fuzzy Modeling: Adaptive networks based Fuzzy interface systems - Classification and Regression Trees - Data clustering algorithms - Rule based structure identification – Neuro - Fuzzy controls - Simulated annealing – Evolutionary computation

Unit IV

Genetic Algorithms - Survival of the Fittest - Fitness Computations - Cross over - Mutation - Reproduction - Rank method - Rank space method.

Unit V

SOFTCOMPUTING AND CONVENTIONAL AI: AI search algorithm - Predicate calculus - Rules of inference – Semantic networks - Frames - Objects - Hybrid models – Applications

Text Book(s)

1. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall 1998.
2. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill, 1997.
3. Laurene Fausett, "Fundamentals of Neural Networks", Prentice Hall, 1994.
4. D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y, 1989.